

THAT WHICH IS CLAIMED:

1. An aluminum alloy comprising:
89 atomic% to 99 atomic% aluminum;
5 1 atomic% to 11 atomic% of a secondary metal selected from the group consisting of magnesium, lithium, silicon, titanium, zirconium, and combinations thereof; and
up to about 10 atomic% of a tertiary metal selected from the group consisting of Be, Ca, Sr, Ba, Ra, Sc, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Y, Nb, Mo, Tc, Ru, Rh, Pd, 10 Ag, Cd, W, and combinations thereof;
wherein the alloy comprises at least 0.3% nitrogen by weight,
wherein the alloy has an average grain size of less than 0.5 μm , and
wherein the alloy is substantially free of refractory materials.
- 15 2. The aluminum alloy of Claim 1, wherein the secondary metal is magnesium.
3. The aluminum alloy of Claim 2, wherein the magnesium is present in an amount of 4 weight% to 10 weight% of the alloy.
- 20 4. The aluminum alloy of Claim 3, wherein aluminum is present in an amount of 82 weight% to 96 weight%, and the tertiary metals are selected from the group consisting of zinc, copper, cobalt, zirconium, and nickel.
- 25 5. The aluminum alloy of Claim 4, comprising 6 weight% to 9 weight% zinc, less than 2 weight% copper, less than 2 weight% cobalt, less than about 0.2 weight% zirconium, and less than about 0.2 weight% nickel.
- 30 6. The aluminum alloy of Claim 1, wherein the alloy has a stable grain structure up to at least 850°F.
7. The aluminum alloy of Claim 1, wherein the alloy is in the form of an extrusion.

8. The aluminum alloy of Claim 1, wherein the alloy is in the form of a forging.

9. The aluminum alloy of Claim 1, wherein the alloy comprises less than 5 about 0.5 volume% refractory material.

10. An aluminum alloy consisting essentially of:
89 atomic% to 99 atomic% aluminum;
1 atomic% to 11 atomic% of a secondary metal selected from the group 10 consisting of magnesium, lithium, silicon, titanium, zirconium, and combinations thereof; and
up to about 10 atomic% of a tertiary metal selected from the group consisting of Be, Ca, Sr, Ba, Ra, Sc, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Y, Nb, Mo, Tc, Ru, Rh, Pd, Ag, Cd, W, and combinations thereof; and,
15 at least 0.3% nitrogen by weight.

11. The alloy of Claim 10 wherein the alloy has an average grain size of less than 0.5 μm

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